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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

KRAVETS, LEONID

ART UNIT

PAPER NUMBER

2189

DATE MAILED: 11/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                             |  |
|------------------------------|-------------------------------|-----------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/699,638 | Applicant(s)<br>TRAN ET AL. |  |
|                              | Examiner<br>Leonid Kravets    | Art Unit<br>2189            |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

1. Applicant is reminded of the proper format for certain sections of a specification. Please provide a statement detailing the field of art and a brief summary of the invention according to sections (f) and (g). Further, please amend the abstract to provide a brief narrative of the disclosure as disclosed in section (k).

#### **Content of Specification**

- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
  - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
  - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the

invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation "determining a set of programming statements" is indefinite because there are many ways to determine the statements, such as thinking the statements up, writing them down on paper or selecting them from a list.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-9 and 14-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakhimovsky (US Patent 6,058,460).

6. As per claim 1, Nakhimovsky discloses a method, comprising:

determining a set of programming statements associated with a multithreaded network processing element, the network processing element having a local memory [The method of Nakhimovsky describes a processing element having an associated memory pool in the system memory; wherein the method is applicable to any application requiring parallel memory management. A network processing element is interpreted to be a processor having parallel threads requiring memory management (Col 1, Lines 47-52, 61-62)];

arranging for a first portion of the local memory to be allocated to a first thread context (Col 3, Lines 1-4) in accordance with a programming statement that is associated with a first thread and symbolically references a buffer name [Nakhimovsky discloses memory pools being numbered, since each memory pool contains a buffer, the buffers are also numbered (Col 5, Lines 54-55)]; and

arranging for a second portion of the local memory to be allocated to a second thread context (Col 3, Lines 1-4) in accordance with a programming statement that is associated with a second thread and symbolically references the buffer name [Nakhimovsky discloses memory pools being numbered, since each memory pool contains a buffer, the buffers are also numbered (Col 5, Lines 54-55)].

7. As per claim 2, Nakhimovsky discloses the method of claim 1, wherein said determining comprises retrieving the set of programming statements from a storage device (Col 2, Lines 63-66).

8. As per claim 3, Nakhimovsky discloses the method of claim 1, wherein said arranging comprises translating the programming statements into code [Programming statements must be translated into code for them to be understood by a computer, and therefore, to arrange the memory of claim 1 (Col 2, Line 67 – Col 3, Line 2)].

9. As per claim 4, Nakhimovsky discloses the method of claim 1, further comprising:  
arranging for information associated with the first thread context to be stored in the first portion of the local memory (Col 4, Lines 3-8); and  
arranging for information associated with the second thread context to be stored in the second portion of the local memory (Col 4, Lines 3-8).

10. As per claim 5, Nakhimovsky discloses the method of claim 1, further comprising:

freeing the second portion of the local memory in accordance with another programming statement that symbolically references the buffer name (Col 4, Lines 60-65).

11. As per claim 6, Nakhimovsky discloses the method of claim 1, wherein the symbolic reference to the buffer name may be passed in at least one of: (i) a function, and (ii) a macro (Col 5, Line 44-45).

12. As per claim 7, Nakhimovsky discloses the method of claim 1, further comprising: translating the set of programming statements into code [all programming statements must be translated into code in order to be read by a computer (Col 2, Line 67 – Col 3, Line 1)]; and

providing the code [The computer readable instructions are translated and then must be output somewhere, whether to storage or executed, thus they are provided].

13. As per claim 8, Nakhimovsky discloses the method of claim 7, wherein the provided code is associated with at least one of: (i) assembly language, and (ii) microcode [The programming statements of Nakhimovsky are created in C (Col 7, Line 26-31). All C code is translated into assembly language or microcode before it can be read by a computer].

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14. As per claim 9, Nakhimovsky discloses the method of claim 1, wherein the local memory comprises at least one of: (i) memory at the network processing element [The system memory is connected to the processors, which are interpreted as the network processing element in claim 1 (Fig 1, Ref 12 and 14)], (ii) hardware registers at the network processing element, and (iii) a local cache.

15. As per claim 14, Nakhimovsky discloses an article, comprising:

a storage medium having stored thereon instructions that when executed by a machine result in the following (Col 2, Line 63 – 66):

determining a set of programming statements associated with a multithreaded network processing element, the network processing element having a local memory [The method of Nakhimovsky describes a processing element having an associated memory pool in the system memory; wherein the method is applicable to any application requiring parallel memory management. A network processing element is interpreted to be a processor having parallel threads requiring memory management (Col 1, Lines 47-52, 61-62)];

arranging for a first portion of the local memory to be allocated to a first thread context (Col 3, Lines 1-4) in accordance with a programming statement that is associated with a first thread and symbolically references a buffer name [Nakhimovsky discloses memory pools being numbered, since each memory pool contains a buffer, the buffers are also numbered (Col 5, Lines 54-55)]; and



arranging for a second portion of the local memory to be allocated to a second thread context (Col 3, Lines 1-4) in accordance with a programming statement that is associated with a second thread and symbolically references the buffer name [Nakhimovsky discloses memory pools being numbered, since each memory pool contains a buffer, the buffers are also numbered (Col 5, Lines 54-55)].

16. As per claim 15, Nakhimovsky discloses the article of claim 14, wherein execution of the instructions further results in:

translating the set of programming statements into code [Programming statements must be translated into code for them to be understood by a computer, and therefore, to arrange the memory of claim 1 (Col 2, Line 67 – Col 3, Line 2)]..

17. As per claim 16, Nakhimovsky discloses the article of claim 15, wherein execution of the instructions further results in:

providing the code [The computer readable instructions are translated and then must be output somewhere, whether to storage or executed, thus they are provided].

18. As per claim 17, Nakhimovsky discloses an article, comprising:

a storage medium having stored thereon a set of programming statements adapted to be translated into code (Col 2, Line 63 – Col 3, Line 1), said programming statements including:

a programming statement associated with a first thread (Col 3, Lines 1-4) that

uses a buffer name to symbolically reference information that a first thread context will store in local memory at a multithreaded network processing element name [Nakhimovsky discloses memory pools being numbered, since each memory pool contains a buffer, the buffers are also numbered. Thus, the data in the memory is symbolically represented by the number (name) of the buffer (Col 5, Lines 54-55)]; and

a programming statement associated with a second thread (Col 3, Lines 1-4) that uses the buffer name to symbolically reference information that a second thread context will store in the local memory at the network processing element [Nakhimovsky discloses memory pools being numbered, since each memory pool contains a buffer, the buffers are also numbered. Thus, the data in the memory is symbolically represented by the number (name) of the buffer (Col 5, Lines 54-55)].

19. As per claim 18, Nakhimovsky discloses the article of claim 17, where said programming statements further include:

a programming statement that uses the buffer name to symbolically reference information that the second thread context will no longer store in the local memory at the network processing element (Col 4, Lines 60-65).

20. As per claim 19, Nakhimovsky discloses a method, comprising:

defining a programming statement that is associated with a first thread (Col 3, Lines 1-4) and uses a buffer name to symbolically reference information that a first thread context will store in local memory at a multithreaded network processing element

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[Nakhimovsky discloses memory pools being numbered, since each memory pool contains a buffer, the buffers are also numbered. Thus, the data in the memory is symbolically represented by the number (name) of the buffer (Col 5, Lines 54-55)]; and

defining a programming statement that is associated with a second thread (Col 3, Lines 1-4) and uses the buffer name to symbolically reference information that a second thread context will store in the local memory at the network processing element

[Nakhimovsky discloses memory pools being numbered, since each memory pool contains a buffer, the buffers are also numbered. Thus, the data in the memory is symbolically represented by the number (name) of the buffer (Col 5, Lines 54-55)].

21. As per claim 20, Nakhimovsky discloses the method of claim 19, further comprising:

arranging for the programming statements to be translated into code

[Programming statements must be translated into code for them to be understood by a computer, and therefore, to arrange the memory of claim 1 (Col 2, Line 67 – Col 3, Line 2)].

22. As per claim 21, Nakhimovsky discloses a system, comprising:

a processor [Nakhimovsky discloses that the invention is a computer-readable medium. It is inherent that a computer has a processor]; and

a hard disk drive having stored therein instructions that when executed by a machine (Col 2, Lines 63-64) result in the following:

translating C programming language instructions into code [C Programming instructions must be translated into code for them to be understood by a computer, and therefore, to arrange the memory of claim 1 (Col 2, Line 67 – Col 3, Line 2)], and

translating an additional programming statement into code, the additional programming statement using a buffer name to symbolically reference information that a thread context will store in local memory at a multithreaded network processing element [Nakhimovsky discloses memory pools being numbered, since each memory pool contains a buffer, the buffers are also numbered. Thus, the data in the memory is symbolically represented by the number (name) of the buffer (Col 5, Lines 54-55)].

23. As per claim 22, Nakhimovsky discloses the system of claim 21, further comprising:

an interface to facilitate a transfer of the code from the system to the network processing element [It is inherent that an interface exist to facilitate transfer of the code from the system to the network processing element, as otherwise the units could not communicate. If the units are the same, they are interfaced as well.

### ***Claim Rejections - 35 USC § 103***

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

26. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakhimovsky as applied to claim 1 above, and further in view of Liljeqvist.

27. As per claim 10, Nakhimovsky discloses the method of claim 1. Nakhimovsky does not disclose the method wherein the network processing element is a reduced instruction set computer microengine in a network device.

Liljeqvist discloses that a network processing element is a reduced instruction set computer microengine in a network device (The Processing Element, 1<sup>st</sup> Paragraph).

28. As per claim 11, the combination of Nakhimovsky and Liljeqvist disclose the method of claim 10. Liljeqvist further discloses the method wherein the network device is associated with at least one of: (i) information packet header parsing, (ii) exception packet identification, (iii) information packet receipt, (iv) information packet transformation, and (v) information packet transmission (The Technological Incentive, 2<sup>nd</sup> Paragraph).

29. As per claim 12, the combination of Nakhimovsky and Liljeqvist disclose the method of claim 10. Liljeqvist further discloses the method wherein the network device is associated with at least one of: (i) Internet protocol information packets, (ii) Ethernet information packets, (iii) asynchronous transfer mode protocol, (iv) a local area network, (v) a wide area network, (vi) a network processor, (vii) a switch, and (viii) a router (The Technological Incentive, 2<sup>nd</sup> Paragraph; The Economical Incentive, 2<sup>nd</sup> Paragraph).

As per claim 13, Nakhimovsky and Liljeqvist disclose the method of claim 12. Nakhimovsky further discloses the method wherein the set of programming statements includes at least one of: (i) an allocate buffer instruction (Col 5, Lines 44-45), (ii) a bind buffer address instruction, (iii) an activate buffer instruction, (iv) a deactivate buffer instruction, and (v) a free buffer instruction (Col 4, Line 63).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the Reduced instruction set computer microengine of Liljeqvist into the system of Nakhimovsky, since Nakhimovsky and Liljeqvist form the same field of endeavor, namely processing elements and this would provide for higher performance by maximizing utilization in performing networking tasks (PE Configurations).

***Conclusion***

30. The following is text cited from 37 CFR 1.111(c): In amending in reply to a rejection of claims in an application or patent under reexamination, the applicant or patent owner must clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. The applicant or patent owner must also show how the amendments avoid such references or objections.

31. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Kravets whose telephone number is 571-272-2706. The examiner can normally be reached on M-F, 8-4:30.

33. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached at 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

34. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*L.K.*

Leonid Kravets  
Patent Examiner  
Art Unit 2189

November 4, 2005



BEHZAD JAMES PEIKARI  
PRIMARY EXAMINER